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22429 7590 09/24/2010

LOWE HAUPTMAN HAM & BERNER, LLP  
1700 DIAGONAL ROAD  
SUITE 300  
ALEXANDRIA, VA 22314

EXAMINER

PHUONG, DAI

ART UNIT

PAPER NUMBER

2617

DATE MAILED: 09/24/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,302	01/19/2007	Young-Lak Kim	4949-06085587	2320

TITLE OF INVENTION: METHOD FOR CONTROLLING MULTI-MODE MULTI-BAND MOBILE COMMUNICATION TERMINAL FOR HAND-OVER BETWEEN ASYNCHRONOUS COMMUNICATION NETWORK AND SYNCHRONOUS COMMUNICATION NETWORK AND MOBILE COMMUNICATION SYSTEM THEREFOR

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	12/27/2010

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

### HOW TO REPLY TO THIS NOTICE:

#### I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

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B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

# **PART B - FEE(S) TRANSMITTAL**

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22429 7590 09/24/2010

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(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,302	01/19/2007	Young-Lak Kim	4949-06085587	2320

TITLE OF INVENTION: METHOD FOR CONTROLLING MULTI-MODE MULTI-BAND MOBILE COMMUNICATION TERMINAL FOR HAND-OVER BETWEEN ASYNCHRONOUS COMMUNICATION NETWORK AND SYNCHRONOUS COMMUNICATION NETWORK AND MOBILE COMMUNICATION SYSTEM THEREFOR

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nonprovisional	NO	\$1510	\$300	\$0	\$1810	12/27/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
PHUONG, DAI	2617	370-331000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_
- 3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

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Date \_\_\_\_\_

Typed or printed name \_\_\_\_\_

Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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EXAMINER

PHUONG, DAI

ART UNIT

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## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 721 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 721 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/585,302	KIM ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	DAI A. PHUONG	2617	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 08/16/2010.
2. ☒ The allowed claim(s) is/are 1,2,4,6,7,10,12-14,17,20 and 22.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
  - \* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. <input type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br/>Paper No./Mail Date _____</li> <li>4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br/>of Biological Material</li> </ol> | <ol style="list-style-type: none"> <li>5. <input type="checkbox"/> Notice of Informal Patent Application</li> <li>6. <input type="checkbox"/> Interview Summary (PTO-413),<br/>Paper No./Mail Date _____.</li> <li>7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment</li> <li>8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance</li> <li>9. <input type="checkbox"/> Other _____.</li> </ol> |
|--|---|

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The references listed in the Information Disclosure Statement filed on 08/16/2010 have been considered by the examiner.

### ***Examiner amendment***

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Yoon S Ham (Reg. No. 45307) on 09/10/2010.

The application has been amended as follows:

In The Claim:

1. (Currently Amended) A method of controlling a multi-mode multi-band mobile communication terminal for handover, the multi-mode multi-band mobile communication terminal being provided with an asynchronous modem unit and a synchronous modem unit and being ~~capable of~~ configured to receiving receive signals from a synchronous mobile communication system during use of service provided by an asynchronous mobile communication system in a mobile communication network in which the asynchronous and synchronous mobile communication systems coexist, the method comprising:

[[the]]a first step of, as the multi-mode multi-band mobile communication terminal using the service provided by the asynchronous mobile communication system moves into a synchronous area, the asynchronous modem unit of the multi-mode multi-band mobile communication terminal receiving a dummy pilot signal from the synchronous mobile

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communication system wherein the dummy pilot signal has the same frequency as that used in the asynchronous mobile communication system, driving the synchronous modem unit of the multi-mode multi-band mobile communication terminal, searching for a cell in which to perform a handover, notifying the asynchronous mobile communication system of results of ~~a~~ the search for ~~a~~ the cell in which to perform the handover, and transmitting a channel assignment message to the synchronous modem unit when a handover command has been received from the asynchronous mobile communication system;

[[the]]a second step of switching a vocoder and turning off the asynchronous modem unit; and

[[the]]a third step of the synchronous modem unit achieving synchronization with the synchronous mobile communication system, the third step comprising ~~the~~ steps of:

the synchronous modem unit changing to a traffic state;

the synchronous modem unit transmitting a reverse traffic signal to ~~the~~ a base station of the synchronous mobile communication system; and

the synchronous modem unit notifying the synchronous mobile communication system that the handover has been completed.

2. (Currently Amended) A method of controlling a multi-mode multi-band mobile communication terminal for handover, the multi-mode multi-band mobile communication terminal being provided with an asynchronous modem unit and a synchronous modem unit and being ~~capable of~~ configured to ~~transmitting~~ transmit and ~~receiving~~ receive signals to and from a synchronous mobile communication system during use of service provided by an asynchronous mobile communication system in a mobile communication network in which the asynchronous and synchronous mobile communication systems coexist, ~~the multi-mode multi-band mobile communication terminal being capable of transmitting and receiving signals to and from the synchronous mobile communication system during use of service provided by the asynchronous mobile communication system~~, the method comprising:

[[the]]a first step of, as the multi-mode multi-band mobile communication terminal using the service provided by the asynchronous mobile communication system moves into a synchronous area, the asynchronous modem unit of the multi-mode multi-band mobile

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communication terminal receiving a dummy pilot signal from the synchronous mobile communication system wherein the dummy pilot signal has the same frequency as that used in the asynchronous mobile communication system, driving the synchronous modem unit of the multi-mode multi-band mobile communication terminal, searching for a cell in which to perform a handover, notifying the asynchronous mobile communication system of results of ~~a~~ the search for ~~a~~ the cell in which to perform the handover, and transmitting a channel assignment message to the synchronous modem unit when a handover command has been received from the asynchronous mobile communication system;

[[the]]a second step of the synchronous modem unit achieving synchronization with the synchronous mobile communication system, the second step comprising ~~the~~ steps of:

the synchronous modem unit changing to a traffic state;

the synchronous modem unit transmitting a reverse traffic signal to ~~the~~ a base station of the synchronous mobile communication system; and

the synchronous modem unit notifying the synchronous mobile communication system that ~~the~~ handover has been completed; and

[[the]]a third step of switching a vocoder and turning off the asynchronous modem unit.

3. (Cancelled)

4. (Currently Amended) The method of controlling the multi-mode multi-band mobile communication terminal for handover control method according to claim 1, wherein the first step comprises ~~the~~ steps of:

the asynchronous modem unit receiving the dummy pilot signal from ~~a~~ the base station of the synchronous mobile communication system;

the asynchronous modem unit requesting the synchronous modem unit to drive a synchronous modem;

the synchronous modem unit performing an initialization procedure for the synchronous modem, and searching for a pilot channel of the synchronous mobile communication system;

the synchronous modem unit notifying the asynchronous modem unit of results of a ~~a~~ the search for ~~a~~ the pilot channel, which are the search results for ~~the~~ a cell of the synchronous mobile communication system;

the asynchronous modem unit transmitting the search results for the cell of the synchronous mobile communication system to the asynchronous mobile communication system;

the synchronous modem unit searching for a synchronous channel of the synchronous mobile communication system and changing to an idle state; and

the asynchronous modem unit transmitting the channel assignment message to the synchronous modem unit as the asynchronous mobile communication system commands the asynchronous modem unit to perform the handover.

6. (Currently Amended) A method of controlling a multi-mode multi-band mobile communication terminal for handover, the multi-mode multi-band mobile communication terminal being provided with an asynchronous modem unit and a synchronous modem unit and being ~~capable of~~ configured to receiving receive signals from a synchronous mobile communication system during use of service provided by an asynchronous mobile communication system in a mobile communication network, in which the asynchronous and synchronous mobile communication systems coexist and a handover cell area having a preset size is placed at a boundary region between asynchronous and synchronous mobile communication system areas, the method comprising:

[[the]]a first step of, as the multi-mode multi-band mobile communication terminal using the service provided by the asynchronous mobile communication system moves into the synchronous mobile communication system area through the handover cell area, the asynchronous modem unit of the multi-mode multi-band mobile communication terminal obtaining system information transmitted from a handover base station in the handover cell area wherein the system information obtained by the multi-mode multi-band mobile communication terminal from the handover base station has the same frequency as that used in the asynchronous mobile communication system, driving the synchronous modem unit of the multi-mode multi-band mobile communication terminal, and requesting the asynchronous mobile communication system to perform a handover;



[[the]]a second step of the multi-mode multi-band mobile communication terminal driving the synchronous modem unit and changing to an idle state;

[[the]]a third step of the asynchronous modem unit of the multi-mode multi-band mobile communication terminal transmitting a channel assignment message to the synchronous modem unit when a handover command has been received from the asynchronous mobile communication system;

[[the]]a fourth step of the multi-mode multi-band mobile communication terminal turning off the asynchronous modem unit and switching a vocoder; and

[[the]]a fifth step of the synchronous modem unit achieving synchronization with the synchronous mobile communication system, the fifth step comprising steps of:

the synchronous modem unit changing to a traffic state;

the synchronous modem unit transmitting a reverse traffic signal to a base station of

the synchronous mobile communication system; and

the synchronous modem unit notifying the synchronous mobile communication system that the handover has been completed.

7. (Currently Amended) A method of controlling a multi-mode multi-band mobile communication terminal for handover, the multi-mode multi-band mobile communication terminal being provided with an asynchronous modem unit and a synchronous modem unit and being ~~capable of~~ configured to receiving receive signals from a synchronous mobile communication system during use of service provided by an asynchronous mobile communication system in a mobile communication network, in which the asynchronous and synchronous mobile communication systems coexist and a handover cell area having a preset size is placed at a boundary region between asynchronous and synchronous mobile communication system areas, the multi-mode multi-band mobile communication terminal being capable of configured to transmitting transmit and ~~receiving receive~~ signals to and from the synchronous mobile communication system during use of service provided by the asynchronous mobile communication system, the method comprising:

[[the]]a first step of, as the multi-mode multi-band mobile communication terminal using the service provided by the asynchronous mobile communication system moves into the

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synchronous mobile communication system area through the handover cell area, the asynchronous modem unit of the multi-mode multi-band mobile communication terminal obtaining system information transmitted from a handover base station in the handover cell area wherein the system information obtained by the multi-mode multi-band mobile communication terminal from the handover base station has the same frequency as that used in the asynchronous mobile communication system, driving the synchronous modem unit of the multi-mode multi-band mobile communication terminal, and requesting the asynchronous mobile communication system to perform a handover;

[[the]]a second step of the multi-mode multi-band mobile communication terminal driving the synchronous modem unit and changing to an idle state;

[[the]]a third step of the asynchronous modem unit of the multi-mode multi-band mobile communication terminal transmitting a channel assignment message to the synchronous modem unit when a handover command has been received from the asynchronous mobile communication system;

[[the]]a fourth step of the synchronous modem unit achieving synchronization with the synchronous mobile communication system, the fourth step comprising steps of:

the synchronous modem unit changing to a traffic state;

the synchronous modem unit transmitting a reverse traffic signal to a base station of the synchronous mobile communication system; and

the synchronous modem unit notifying the synchronous mobile communication system that the handover has been completed; and

[[the]]a fifth step of the multi-mode multi-band mobile communication terminal turning off the asynchronous modem unit and switching a vocoder.

8. (Cancelled)

9. (Cancelled)

10. (Currently Amended) The method of controlling the multi-mode multi-band mobile communication terminal for handover control method according to claim 6, wherein the second step comprises the steps of:

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the synchronous modem unit performing an initialization procedure for the synchronous modem and preparing to search for a pilot channel of the synchronous mobile communication system;

the synchronous modem unit searching for the pilot channel and a synchronous channel of the synchronous mobile communication system; and

the synchronous modem unit changing to an idle state.

11. (Cancelled)

12. (Currently Amended) The method of controlling the multi-mode multi-band mobile communication terminal for handover ~~control method~~ according to claim 6, wherein the handover cell area has a size of  $S_{\text{HOCELL}} = V_{\text{MS}} * T_{\text{HO}}$ , where  $S_{\text{HOCELL}}$  is the size of the handover cell,  $V_{\text{MS}}$  is a moving speed of the mobile communication terminal, and  $T_{\text{HO}}$  is a time required for the handover.

13. (Currently Amended) A mobile communication system, comprising:

a synchronous mobile communication network;

an asynchronous mobile communication network overlapping with the synchronous mobile communication network; and

a handover cell area placed at a boundary between a synchronous mobile communication system and an asynchronous mobile communication system and provided with a handover base station for transmitting a signal having the same frequency as that used in the asynchronous mobile communication system,

wherein the mobile communication system is operated in such a way that, as a multi-mode multi-band mobile communication terminal having an asynchronous modem unit and a synchronous modem unit passes through the handover cell area from an asynchronous mobile communication network area and then moves into a synchronous mobile communication network area, the multi-mode multi-band mobile communication terminal receives a signal transmitted from the handover base station, thus performing handover, and

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wherein the handover cell area has a size of  $S_{\text{HOCELL}} = V_{\text{MS}} * T_{\text{HO}}$ , where  $S_{\text{HOCELL}}$  is the size of the handover cell,  $V_{\text{MS}}$  is a moving speed of the mobile communication terminal, and  $T_{\text{HO}}$  is a time required for the handover.

16. (Cancelled)

17. (Currently Amended) The method of controlling the multi-mode multi-band mobile communication terminal for handover ~~control method~~ according to claim 2, wherein the first step comprises the steps of:

the asynchronous modem unit receiving the dummy pilot signal from ~~a~~ the base station of the synchronous mobile communication system;

the asynchronous modem unit requesting the synchronous modem unit to drive a synchronous modem;

the synchronous modem unit performing an initialization procedure for the synchronous modem, and searching for a pilot channel of the synchronous mobile communication system;

the synchronous modem unit notifying the asynchronous modem unit of results of a search for a pilot channel, which are the search results for the cell of the synchronous mobile communication system;

the asynchronous modem unit transmitting the search results for the cell of the synchronous mobile communication system to the asynchronous mobile communication system;

the synchronous modem unit searching for a synchronous channel of the synchronous mobile communication system and changing to an idle state; and

the asynchronous modem unit transmitting the channel assignment message to the synchronous modem unit as the asynchronous mobile communication system commands the asynchronous modem unit to perform handover.

18. (Cancelled)

19. (Cancelled)

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20. (Currently Amended) The method of controlling the multi-mode multi-band mobile communication terminal for handover ~~control method~~ according to claim 7, wherein the second step comprises the steps of:

the synchronous modem unit performing an initialization procedure for the synchronous modem and preparing to search for a pilot channel of the synchronous mobile communication system;

the synchronous modem unit searching for the pilot channel and a synchronous channel of the synchronous mobile communication system; and

the synchronous modem unit changing to an idle state.

21. (Cancelled)

22. (Currently Amended) The method of controlling the multi-mode multi-band mobile communication terminal for handover ~~control method~~ according to claim 7, wherein the handover cell area has a size of  $S_{HOCELL} = V_{MS} * T_{HO}$ , where  $S_{HOCELL}$  is the size of the handover cell,  $V_{MS}$  is a moving speed of the mobile communication terminal, and  $T_{HO}$  is a time required for the handover.

(End of Amendment)

***Allowable Subject Matter***

2. Claims 1-2, 4, 6-7, 10, 12-14, 17, 20 and 22 are allowed.

The following is an examiner's statement of reasons for allowance:

Regarding claim 1, none of the prior art of record teach or suggest a first step of, as the multi-mode multi-band mobile communication terminal using the service provided by the asynchronous mobile communication system moves into a synchronous area, the asynchronous modem unit of the multi-mode multi-band mobile communication terminal receiving a dummy pilot signal from the synchronous mobile communication system wherein the dummy pilot signal has the same frequency as that used in the asynchronous mobile communication system, driving

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the synchronous modem unit of the multi-mode multi-band mobile communication terminal, searching for a cell in which to perform a handover, notifying the asynchronous mobile communication system of results of the search for the cell in which to perform the handover, and transmitting a channel assignment message to the synchronous modem unit when a handover command has been received from the asynchronous mobile communication system;

a second step of switching a vocoder and turning off the asynchronous modem unit; and

a third step of the synchronous modem unit achieving synchronization with the synchronous mobile communication system, the third step comprising steps of:

the synchronous modem unit changing to a traffic state;

the synchronous modem unit transmitting a reverse traffic signal to a base station of the synchronous mobile communication system; and

the synchronous modem unit notifying the synchronous mobile communication system that the handover has been completed.

Therefore, the Examiner allows these limitations in combination with other features recited in the claim. Claim 4 is also allowed because the claims are dependent directly on claim 1.

Regarding claim 2, none of the prior art of record teach or suggest a first step of, as the multi-mode multi-band mobile communication terminal using the service provided by the asynchronous mobile communication system moves into a synchronous mobile communication system area, the asynchronous modem unit of the multi-mode multi-band mobile communication terminal receiving a dummy pilot signal from the synchronous mobile communication system wherein the dummy pilot signal has the same frequency as that used in the asynchronous mobile communication system, driving the synchronous modem unit of the multi-mode multi-band mobile communication terminal, searching for a cell in which to perform a handover, notifying the asynchronous mobile communication system of results of the search for the cell in which to perform the handover, and transmitting a channel assignment message to the synchronous modem unit when a handover command has been received from the asynchronous mobile communication system;

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a second step of the synchronous modem unit achieving synchronization with the synchronous mobile communication system, the second step comprising steps of:

the synchronous modem unit changing to a traffic state;

the synchronous modem unit transmitting a reverse traffic signal to a base station of the synchronous mobile communication system; and

the synchronous modem unit notifying the synchronous mobile communication system that the handover has been completed; and

a third step of switching a vocoder and turning off the asynchronous modem unit.

Therefore, the Examiner allows these limitations in combination with other features recited in the claim. Claim 17 is also allowed because the claims are dependent directly on claim 2.

Regarding claim 6, none of the prior art of record teach or suggest a first step of, as the multi-mode multi-band mobile communication terminal using the service provided by the asynchronous mobile communication system moves into the synchronous mobile communication system area through the handover cell area, the asynchronous modem unit of the multi-mode multi-band mobile communication terminal obtaining system information transmitted from a handover base station in the handover cell area wherein the system information obtained by the multi-mode multi-band mobile communication terminal from the handover base station has the same frequency as that used in the asynchronous mobile communication system, driving the synchronous modem unit of the multi-mode multi-band mobile communication terminal, and requesting the asynchronous mobile communication system to perform a handover;

a second step of the multi-mode multi-band mobile communication terminal driving the synchronous modem unit and changing to an idle state;

a third step of the asynchronous modem unit of the multi-mode multi-band mobile communication terminal transmitting a channel assignment message to the synchronous modem unit when a handover command has been received from the asynchronous mobile communication system;

a fourth step of the multi-mode multi-band mobile communication terminal turning off the asynchronous modem unit and switching a vocoder; and

a fifth step of the synchronous modem unit achieving synchronization with the synchronous mobile communication system, the fifth step comprising steps of:

the synchronous modem unit changing to a traffic state;

the synchronous modem unit transmitting a reverse traffic signal to a base station of the synchronous mobile communication system; and

the synchronous modem unit notifying the synchronous mobile communication system that the handover has been completed.

Therefore, the Examiner allows these limitations in combination with other features recited in the claim. Claims 10 and 12 are also allowed because the claims are dependent directly on claim 6.

Regarding claim 7, none of the prior art of record teach or suggest a first step of, as the multi-mode multi-band mobile communication terminal using the service provided by the asynchronous mobile communication system moves into the synchronous mobile communication system area through the handover cell area, the asynchronous modem unit of the multi-mode multi-band mobile communication terminal obtaining system information transmitted from a handover base station in the handover cell area wherein the system information obtained by the multi-mode multi-band mobile communication terminal from the handover base station has the same frequency as that used in the asynchronous mobile communication system, driving the synchronous modem unit of the multi-mode multi-band mobile communication terminal, and requesting the asynchronous mobile communication system to perform a handover;

a second step of the multi-mode multi-band mobile communication terminal driving the synchronous modem unit and changing to an idle state;

a third step of the asynchronous modem unit of the multi-mode multi-band mobile communication terminal transmitting a channel assignment message to the synchronous modem



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unit when a handover command has been received from the asynchronous mobile communication system;

a fourth step of the synchronous modem unit achieving synchronization with the synchronous mobile communication system, the fourth step comprising steps of:

the synchronous modem unit changing to a traffic state;

the synchronous modem unit transmitting a reverse traffic signal to a base station of the synchronous mobile communication system; and

the synchronous modem unit notifying the synchronous mobile communication system that the handover has been completed; and

a fifth step of the multi-mode multi-band mobile communication terminal turning off the asynchronous modem unit and switching a vocoder.

Therefore, the Examiner allows these limitations in combination with other features recited in the claim. Claims 20 and 22 are also allowed because the claims are dependent directly on claim 7.

Regarding claim 13, none of the prior art of record teach or suggest a handover cell area placed at a boundary between a synchronous mobile communication system and an asynchronous mobile communication system and provided with a handover base station for transmitting a signal having the same frequency as that used in the asynchronous mobile communication system, wherein the mobile communication system is operated in such a way that, as a multi-mode multi-band mobile communication terminal having an asynchronous modem unit and a synchronous modem unit passes through the handover cell area from an asynchronous mobile communication network area and then moves into a synchronous mobile communication network area, the multi-mode multi-band mobile communication terminal receives a signal transmitted from the handover base station, thus performing handover, and

wherein the handover cell area has a size of  $S_{\text{HOCELL}} = V_{\text{MS}} * T_{\text{HO}}$ , where  $S_{\text{HOCELL}}$  is the size of the handover cell,  $V_{\text{MS}}$  is a moving speed of the mobile communication terminal, and  $T_{\text{HO}}$  is a time required for the handover.

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Therefore, the Examiner allows these limitations in combination with other features recited in the claim. Claim 14 is also allowed because the claims are dependent directly on claim 13.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submission should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dai A Phuong whose telephone number is 571-272-7896. The examiner can normally be reached on Monday to Friday, 9:00 A.M. to 5:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached on 571-272-7603. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Dai A Phuong/  
Examiner, Art Unit 2617  
Date: 09/15/2010